

REMARKS

The Official Action mailed March 12, 2004, has been received and its contents carefully noted. This response is filed within three months of the mailing date of the Official Action and therefore is believed to be timely without extension of time. Accordingly, the Applicant respectfully submits that this response is being timely filed.

Further to the interview held between the Examiner and the Applicant's representative on February 25, 2004, and further to paragraph 1 of the Official Action, the Applicant hereby requests entry of the *Amendment* filed January 14, 2004.

The Applicant notes with appreciation the consideration of the Information Disclosure Statements filed on January 13, 2000, April 27, 2000, June 9, 2000, January 3, 2001, January 31, 2001, July 5, 2001, August 15, 2001, October 15, 2001, January 9, 2002, June 7, 2002, July 9, 2002, and July 24, 2003. However, the Applicant has not received acknowledgment of the Information Disclosure Statement filed on February 10, 2004. The Applicant respectfully requests that the Examiner provide an initialed copy of the Form PTO-1449 evidencing consideration of the Information Disclosure Statement filed on February 10, 2004.

Claims 13-17 and 46-82 are pending in the present application, of which claims 13, 46, 51, 55, 60 and 64 are independent. Claims 13, 46-48, 51, 55, 60 and 64 have been amended to better recite the features of the present invention. For the reasons set forth in detail below, all claims are believed to be in condition for allowance. The Applicant notes with appreciation the allowance of claims 46, 49, 50, 70 and 76. Favorable reconsideration is requested.

Paragraph 2 of the Official Action continues to object to the disclosure asserting that reference numerals 316 to 319, 326, 327, 334 and 335 "should refer to the shaded regions instead of the unshaded regions" (page 2, Paper No. 20040302). The Applicant respectfully disagrees and traverses the above assertions in the Official Action. Regions overlapping with a first electrode in n⁻-type impurity regions are shown by a hatching portion and a blank portion does not indicate the phosphorus is not added into

the blank portion. This is intended to make it possible to intuitively understand that the concentration distribution of phosphorus in this region reflects the thickness of the taper portion of the first gate electrode, as shown in lines 2-8 of page 13. The same thing can be said of all drawings in this specification. Therefore, n⁻-type impurity regions 316 to 319, 326, 327, 334 and 335 designate all the regions between the channel formation region, such as the region 311, and the n⁻-type impurity regions, such as the regions 320 and 321, including both the shaded region and the unshaded region. Therefore, the Applicant believes that it is not necessary to correct the drawings. Reconsideration of the objection is requested.

Paragraph 3 of the Official Action objects to claims 46-50, 70 and 76 asserting that the phrase "said second n-channel thin film transistor" has no antecedent basis. In response, independent claim 46 has been amended to recite "said n-channel thin film transistor." Reconsideration of the objection is requested.

Paragraph 4 of the Official Action rejects claim 47 under 35 U.S.C. § 112, first paragraph, asserting that the "specification never discloses top surfaces of the tapered portions of the third conductive layers" (pages 2-3, Paper No. 20040302). In response, claim 47 has been amended to recite "top surfaces of the tapered portions of the first conductive layer." Reconsideration of the rejection under § 112, first paragraph, is requested.

Paragraph 5 of the Official Action rejects claim 48 under 35 U.S.C. § 112, second paragraph, asserting that it unclear whether "the semiconductor island" refers to the first semiconductor island or the second semiconductor island of claim 46. In response, claim 48 has been amended to recite that "the first and second semiconductor islands comprise crystalline silicon." Reconsideration of the rejection under § 112, second paragraph, is requested.

Paragraph 7 of the Official Action rejects claims 13, 15-17, 51, 53-55, 57-60, 62-64, 66-69, 71-74, 81 and 82 as obvious based on the combination of JP 6-148685 to Nakazono et al. and JP 8-264784 to Kurokawa. Paragraph 8 of the Official Action

rejects claims 14, 52, 56, 61 and 65 as obvious based on the combination of Nakazono, Kurokawa, and U.S. Patent No. 4,394,182 to Maddox III. Paragraph 9 of the Official Action rejects claims 75 and 77-80 as obvious based on the combination of Nakazono, Kurokawa, and U.S. Patent No. 6,114,715 to Hamada. The Applicants respectfully submit that a *prima facie* case of obviousness cannot be maintained against the independent claims of the present invention.

As stated in MPEP §§ 2142-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

There is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Nakazono and Kurokawa or to combine reference teachings to achieve the claimed invention. The Official Action (page 4, Paper No. 20040302) concedes the following:

Nakazono et al. differs from the claimed invention by not showing each of the first and second thin film transistors comprises the first conductive layer having a pair of tapered portions, which extend beyond side edges of

the second conductive layer. In addition, the pair of lightly doped regions has a pair of first portions, which are overlapped by the pair of the tapered portions of the first conductive layer, and a pair of second portions, which extend beyond side edges of the first conductive layer, and wherein the impurity concentration in the pair of first portions is smaller than the impurity concentration in the pair of second portions.

The Official Action relies on Kurokawa to allegedly teach the above features (pages 4-5, Id.). The Official Action asserts that "Since both Nakazono et al. and Kurokawa teach an insulated gate electrode having two conductive layers and a pair of lightly doped regions, it would have been obvious to have the gate electrode structure and the lightly doped regions of Kurokawa in each of the thin film transistors of Nakazono et al. because they prolong the life of the transistor and restrain the short channel effect" (page 5, Id.). The Applicants respectfully disagree and traverse the above assertions in the Official Action.

Nakazono teaches "forming an LDD structure without executing two times of ion implantation" ([0010]). On the other hand, Kurokawa teaches the LDD structure of a MOS transistor which requires two steps of ion implantation. Therefore, the Applicant respectfully submits that the methods of Nakazono and Kurokawa are entirely different, and that it is not clear why one of ordinary skill in the art at the time the present invention was made would have been motivated to undermine the teachings of Nakazono by employing the method of Kurokawa.

In the present application, it is respectfully submitted that the prior art of record, alone or in combination, does not expressly or impliedly suggest the claimed invention and the Official Action has not presented a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.

Maddox and Hamada do not cure the above deficiencies in Nakazono and Kurokawa. Maddox is relied upon to allegedly teach an angle between top surfaces of tapered portions of a gate electrode (page 8, Paper No. 20040302). Hamada is relied upon to allegedly teach that an active matrix display device is an electroluminescent

device (Id.). Nakazono, Kurokawa, Maddox and Hamada, either alone or in combination, do not teach or suggest that the methods of Nakazono and Kurokawa could be combined; or that one of ordinary skill in the art at the time the present invention was made would have been motivated to undermine the teachings of Nakazono by employing the method of Kurokawa.

Therefore, there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Nakazono and Kurokawa or to combine reference teachings to achieve the claimed invention. For the reasons stated above, the Official Action has not formed a proper *prima facie* case of obviousness.

Also, the prior art, either alone or in combination, does not teach or suggest all the features of the independent claims, as amended. Independent claims 13, 51, 55, 60 and 64 have been amended to recite that an interlayer insulating film is in direct contact with at least side surfaces of a second conductive layer. The Applicant respectfully submits that Kurokawa teaches that the SiO₂ films 26 are inevitably included; therefore, the combination of Nakazono and Kurokawa, either alone or in combination, does not teach or suggest that an interlayer insulating film is in direct contact with at least side surfaces of a second conductive layer.

For the reasons noted above, Maddox and Hamada do not cure the above deficiencies in Nakazono and Kurokawa. Nakazono, Kurokawa, Maddox and Hamada, either alone or in combination, do not teach or suggest an interlayer insulating film is in direct contact with at least side surfaces of a second conductive layer.

Since Nakazono, Kurokawa, Maddox and Hamada do not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the Applicant's undersigned attorney at the telephone number listed below.

Respectfully submitted,



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